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**Team Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Team Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**COBRA INVITATIONAL**

**GREEN GENERATION**

**Welcome to the Green Generation Test.**

1. **Teams are only permitted ONE 8.5” X 11” page of notes and any kind of calculator. Teams may not use any other resources**
2. **Please make sure that all the tests sheets are attached when submitting the paper back**
3. **Tiebreakers are within the test and the question will be prefixed with *Tiebreaker #***
4. **You will have 50 minutes to complete the test**
5. **Please plan your time wisely**
6. **Please make sure you write you Team name and number correctly**
7. **Good luck!!**
8. **LList 2 Indoor Air Pollutants *(1pt)***

**Mold,Milddew,Co2,No2,pesticides,leads,asbesto.**

1. **What is a water shed? *(2pt)***

***Area of land where all of the water that is under it are drained off or it goes into the same place.***

1. **Why do food pyramids typically end around the territorial or quaternary consumer? *(2pt)***

**Energy lost at each trophic level due to heat loss,so as an higher level consumer would be able to survive of so there is only little engery left.**

1. **What is population dispersion? What are the types of population dispersion? *(2pt)***

**Population dispersion is the observation of where individuals are found in a habitat. How individuals "disperse" themselves. There are three main types of dispersion: clumped, uniformand random**

1. ***Tiebreaker #1* Describe each type of population dispersion *(4pt)***

***Clumped Dispersion***

***Is the tendency for populations to be found in tight clusters, dispersed across a large landscape. In between these population hubs, very few to no individuals are usually found. This sort of a dispersion can be caused by a number of factors. Some species cluster together for protection, while others group around natural resources necessary to their survival.***

***Uniform Dispersion***

***Is the tendency for populations to be found evenly distributed about their habitat. This is generally caused by a species ability to survive anywhere in their habitat - they use the resources found immediately around them, and spread out as to use all of the available resources.***

***Random Dispersion***

***Is the tendency for populations to be found randomly about their habitat. In immobile species, this is usually caused by their ability to live anywhere in a given habitat, except, they are limited to growing wherever they are first set root (which is usually caused randomly, from spores drifting in the wind to seeds falling and tumbling on the ground). In motile populations, individuals are able to move about their habitat, so that at any given instance, they can be found anywhere about their environment***

1. **How are communities tropically structured? *(2pt)***

***Food chains,Food web,Trophic Pyramid.***

1. **What is survivorship and describe the types of survivorship curves? *(2pt)***

**Survivorship is the percentage of remaining survivors of a population over time usually shown graphically .**

* **Type I survivorship curves are characterized by high age-specific survival probability in early and middle life, followed by a rapid decline in survival in later life. They are typical of species that produce few offspring but care for them well, including** [**humans**](http://en.wikipedia.org/wiki/Human) **and many other large mammals.**
* **Type II curves are an intermediate between Types I and III, where roughly constant** [**mortality rate**](http://en.wikipedia.org/wiki/Mortality_rate)**/survival probability is experienced regardless of age. Some** [**birds**](http://en.wikipedia.org/wiki/Bird) **and some** [**lizards**](http://en.wikipedia.org/wiki/Lizard) **follow this pattern.**
* **In Type III curves, the greatest mortality (lowest age-specific survival) is experienced early in life, with relatively low rates of death (high probability of survival) for those surviving this bottleneck. This type of curve is characteristic of species that produce a large number of offspring (see** [**r/K selection theory**](http://en.wikipedia.org/wiki/R/K_selection_theory)**). This includes most marine invertebrates. For example,** [**oysters**](http://en.wikipedia.org/wiki/Oyster) **produce millions of eggs, but most larvae die from predation or other causes; those that survive long enough to produce a hard shell live relatively long.**

1. **What is SDWA? When & Why was it passed? *(1pt)***

**The safe water Act (SDWA) is the main fedral law that ensuresthe quality of American’s drinking water.SDWA,EPA sets standards for drinking water quality and over seas the states,localities and water suppliers who implemented those standards SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation’s publc drinking wate supply .The law was amended in 1986 and 1996and requires many action to protect drinking water and its sources rivers,lakes reservoirs,springs and ground water wells.**

1. **What is the formula for carrying capacity? *(1pt)***

**pop=pop0+(b+i)-(d-e)**

1. **What is Desertification? What are the major causes of Desertification? *(4pt)***

**Desertification is an expansion of arid conditions into a non -arid environment. Major causes of desertification include**

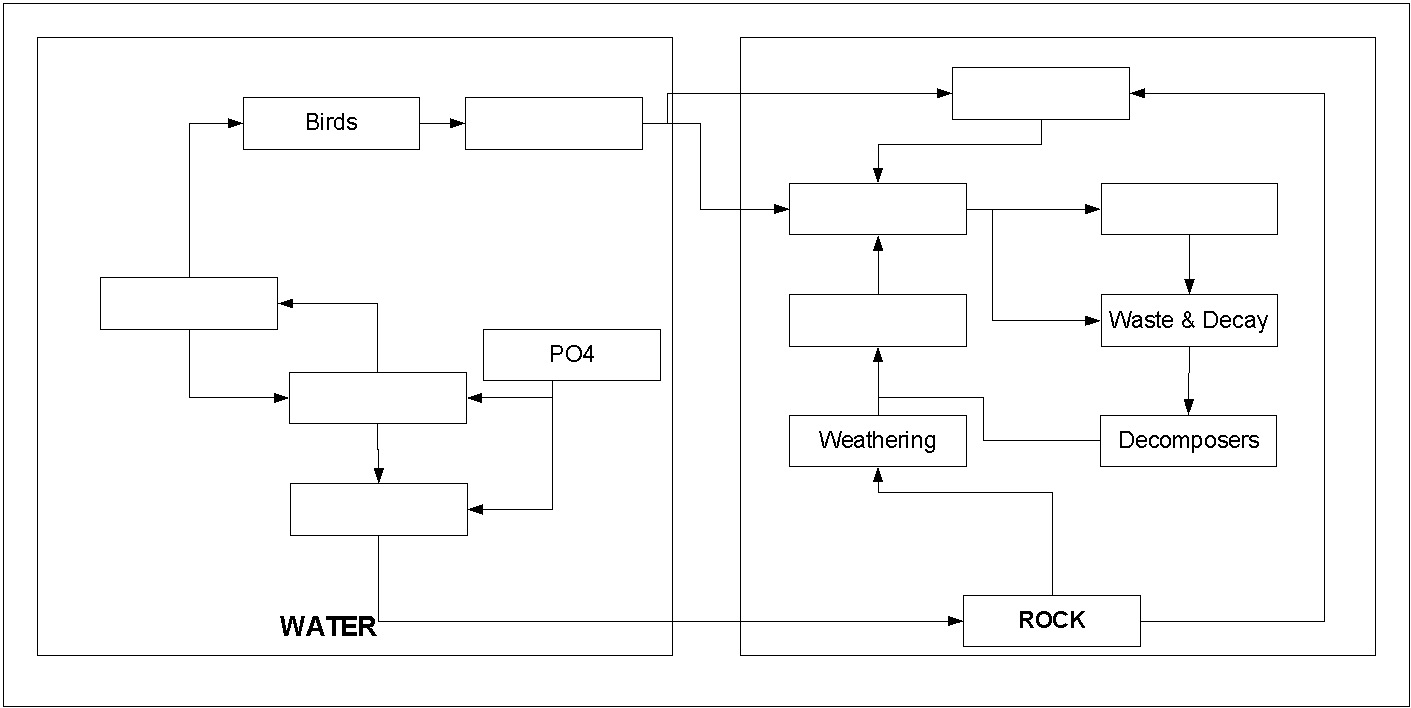
**Overgrazing and poor grazing management**

**cultivation of marginal in arid regions**

**Destruction of vegetation in arid regions.**

**incorrect irrigation practices leading to salinization.**

1. **Phosphorous Cycle *(4pt)***



1. **What are the 3 R’s of recycling? And what does the symbol represent?** *(2pts)*



Reduce,reuse,recycle.

Symbol represent Plastic #3 is used to make food wrap,plumbing pipes,and detergent bottles,and is seldom accepted by curbside recycling programs.These plastics used to,and still may,contain Phthalates,which are linked to numerous health issues ranging from developments problems to miscarriages .they also contain DEHA,which can be carcinogenic with long term exposure.DEHa has also been linked to loss of bone mass and liver problems.Don’t cook with or burn this plastic.

1. **Where does dust ball happen?** *(2pts)*

**In Northern Plains of US.Austin ,Santa FE, New Mexico.**

1. **Petroleum is derived from \_\_\_\_\_\_Cellulose\_\_\_\_\_\_\_\_ *(1pt)***
2. **When did Fukushimdaiichi occur? What were the impacts?** *(2pts)*

**March 2011, in japan.**

**In Japan, residents are still recovering from the disaster. Radioactive water was recently discovered leaking from the** [**Fukushima Daiichi Nuclear Power Plant**](http://www.livescience.com/39067-fukushima-radiation-5-things-to-know.html)**, which suffered a level 7 nuclear meltdown after the tsunami. Japan relies on nuclear power, and many of the country's nuclear reactors remain closed because of stricter seismic safety standards since the earthquake. Two years after the quake, about 300,000 people who lost their homes were still living in temporary housing, the Japanese government said.In Japan, residents are still recovering from the disaster. Radioactive water was recently discovered leaking from the Fukushima Daiichi Nuclear Power Plant, which suffered a level 7 nuclear meltdown after the tsunami. Japan relies on nuclear power, and many of the country's nuclear reactors remain closed because of stricter seismic safety standards since the earthquake. Two years after the quake, about 300,000 people who lost their homes were still living in temporary housing, the Japanese government said.**

1. **What does this picture depict?** *(2pts)*

Door to hell

1. **What are fossil fuels? *(1pt)***

**A Natural Fuels such as coal or gas,formed inthe gelogical past from the remains of living organisms.**

1. **Tiebreaker #2 List 3 alternate fossil fuels. *(1pt)***

***solar, wind power, geothermal,tides and waves biomass,Fuel cells***

1. **What is a biome?** *(2pts)The largest division of the biosphere which inculdes large regions with similar biotic components and similar abiotic components.*
2. **What does the endangered species Act mean?** *(2pts)*

*The* ***Endangered Species Act of 1973*** *(****ESA****;* [*7 U.S.C.*](http://en.wikipedia.org/wiki/Title_7_of_the_United_States_Code)[*§ 136*](http://www.law.cornell.edu/uscode/7/136.html)*,* [*16 U.S.C.*](http://en.wikipedia.org/wiki/Title_16_of_the_United_States_Code)[*§ 1531*](http://www.law.cornell.edu/uscode/16/1531.html) *et seq.) is one of the few dozens of* [*United States environmental laws*](http://en.wikipedia.org/wiki/United_States_environmental_law) *passed in the 1970s. Signed into law by President* [*Richard Nixon*](http://en.wikipedia.org/wiki/Richard_Nixon) *on December 28, 1973, it was designed to protect critically* [*imperiled species*](http://en.wikipedia.org/wiki/Endangered_species) *from* [*extinction*](http://en.wikipedia.org/wiki/Extinction) *as a "consequence of economic growth and development untempered by adequate concern and*[*conservation*](http://en.wikipedia.org/wiki/Habitat_conservation)*." The* [*U.S. Supreme Court*](http://en.wikipedia.org/wiki/Supreme_Court_of_the_United_States) *found that "the plain intent of Congress in enacting" the ESA "was to halt and reverse the trend toward species extinction, whatever the cost."*[*[1]*](http://en.wikipedia.org/wiki/Endangered_Species_Act#cite_note-1) *The Act is administered by two federal agencies, the* [*United States Fish and Wildlife Service*](http://en.wikipedia.org/wiki/United_States_Fish_and_Wildlife_Service) *(FWS) and the* [*National Oceanic and Atmospheric Administration*](http://en.wikipedia.org/wiki/National_Oceanic_and_Atmospheric_Administration) *(NOAA).*

1. **Which endangered species does this belong? Why are they in the endangered list?** *(4pts)*

hunting bats.

1. **What is SER? *(1pt)***

**Society for Ecological restoration .**

1. **Provide 2 strategies for Waste and pollution reduction in** *(4 pts)*
   1. **Industrial1. redesign manufacturing process and products to use less**
   2. **materials**
   3. **cars made from recycled Al, instead of virgin steel**
   4. **2 design products that produce less pollution and waste fewer**
   5. **resources when used**
   6. **paints - source of volatile organic pollutants**
   7. **appliances**
   8. **. redesign manufacturing processes to produce less waste and**
   9. **pollution**
   10. **recover toxic organic solvents**
   11. **replace with water-based or citric-based products**
   12. **green design and life cycle assessment: develop products**
   13. **that last longer, and are easier to repair, reuse, compost or**
   14. **recycle**
   15. **cars: now made so that they are easier to disassemble**
   16. **to recover components**
   17. **tires: 100,000 miles vs. 60,000 miles**
   18. **eliminate/reduce unnecessary packaging**
   19. **tax trash**

**Residential**

**1. decrease consumption**

**Household Ecoteam Program**

**2. use less hazardous/toxic compounds**

**baking soda, vinegar, and borax**

1. **List 2 disadvantages of dams *(1pt)A.*Creating a reservoir destroys the land within the reservoir area by flooding (this was**

**usually very fertile land).**

**B• Reservoir provides more surface area for evaporation and more area for seepage.**

**C.Due to more evaporation more salts gets deposited. When this water is used for irrigation the rateof salinisation of the soil increases.**

**D• A reservoir will obstruct the groundwater drainage to rivers which will cause a rise inthe water level and possibly affect local structure or agricultural lands.**

**E• The raise in water level can destabilise the geodynamic situation leading to substantial**

**.F.landslips.**

**G• Presence of loess soil when saturated with raising water table lead lands to subside.**

**H• Silting is another problem. Slow rate of sediment settlement lead to accumulation of**

**I.grain of sand. This slowly builds the reservoir. This lowers the water level of dams.**

**J• The hydraulic pressures generated by the deep reservoirs can change the seismicity of**

**K.the region. If the height of the dram is high then the chances of earthquake are more.**

1. **What is the zone of aeration**? ***(1pt)***

The zone of aeration is the region between the earth's surface and the water table. The main components of this region are the soil and rocks. Their pores are at times partly filled with water and air, and aeration occurs when the air and water mix or come into close contact.

The presence of water and oxygen gives rise to the formation of soil moisture, which influences the rate of corrosion when it comes into contact with metallic objects buried in the ground.

The zone of aeration is also known as the unsaturated area, vadose zone or zone of suspended water.

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**It is the space between the land surface and water table.**

**• Here water is present in minute quantities, mostly in smaller openings.**

**• In the zone of aeration, water is held by soil and rocks by capillarity forces and it will not**

**come into the well.**

1. **What is fossil water? *(1pt)***

**• Deep ground water is called fossil water. It is non-renewable.**

**• Total quantity of water in aquifer is large. Half of that is present in deep layers. These**

**waters are replaced slowly. These waters were accumulated over 1000s of years.**

1. **What Can You Do to Reduce the Threat of Climate Change By Reducing Carbon Dioxide Emissions? List 3 *(2pts)***

**Reduce use of fossil fuels. Drive a car that gets at least 15 kilometers per liter (35 miles per gallon), join a carpool, and use mass transit, walking, and bicycling as much as possible.**

**Drive less and consolidate trips.**

**See if you can substitute a phone call or e-mail for a trip by car.**

**Insulate new or existing houses heavily, caulk and weatherstrip to reduce air infiltration and heat loss, and use energy-efficient windows.**

**Obtain as much heat and cooling as possible from natural noncarbon sources, especially sun, wind, geothermal energy, and trees.**

**Wash laundry in warm or cold water.**

**Use a low-flow showerhead.**

**Buy the most energy-efficient homes, lights, cars, and appliances available. Evaluate them only in terms of lifetime cost.**

**Turn thermostats down in winter and up in summer.**

**Recycle paper, metals, and glass and compost organic wastes.**

**Buy materials and products that are made locally and that are long lasting.**

1. **What is Riparian Buffer? *(2pts)***

an area of vegetation next to a waterway. It is used to protect the

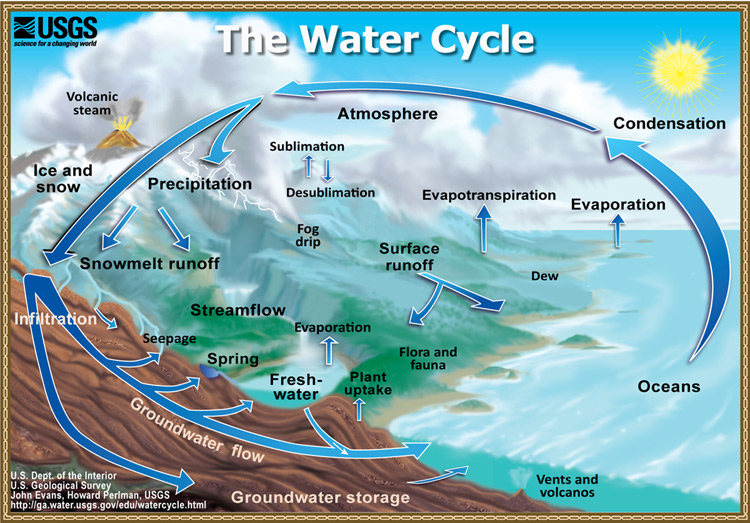
water from pollution and erosion, and to provide a habitat for organisms next to water

1. **Explain Hydrologic (Water Cycle) *(2pts)***

### Hydrologic (Water) Cycle

Biogeochemical cycle that collects, purifies, and distributes the earth's fixed supply of water from the environment to living organisms and then back to the environment.

1. ***Tiebreaker #3* Draw the Hydrologic Cycle *(2pts)***



1. **Explain some environmental ways to respond to an oil spill? *(2pts)***

### some environmental ways to respond to and oil spill are

Mechanical containment (e.g. skimmers) to recover spilled oil on surface,

dispersing agents to prevent spread of spill and to make cleanup easier,

biological agents to degrade the oil into safer compounds, pressure

washing to speed up natural chemical processes, raking to speed up natural chemical

processes, scare tactics to keep away animals

1. **What would happen if there is no Greenhouse effect *(2 pts)***

the earth's average temperature would be 0 F and nothing would grow.

1. **Explain acid rain. *(2 pts)***

rain containing acids that form inthe atmosphere when industrial gas emissions (especially suflur -di-oxide and Nitrogen oxides combine with water.

1. **The Liquid that results after passing through a Land fill which contains dissolved and suspended materials**: ***(1 pt)***
   1. **Lichen**
   2. **Leachate(Answer)**
   3. **Recycle**
   4. **Food Chain**
2. **A relationship between two species in which both species benefit** :

***(1 pt)***

* 1. **Medium Oil**
  2. **Parasitism**
  3. **Mutualism(Answer)**
  4. **Population**

1. **Energy derived from the heat in the interior of the earth *(1 pt)***
   1. **Geothermal(Answer)**
   2. **biosphere**
   3. **leachate**
   4. **biotic**
2. **Strategy that uses microbes, plants or enzymes from these communities to detoxify pollutant contamination---Bioremedation----------- *(1 pt)***
3. **What new law or Act would you pass for a safer greener environment? *(5pts)***

**students write there own acts for greener generation.**

**based on essay marks will be given.**